1-6 Solving Compound and Absolute Value Inequalities

{ } ∩ { } = { }

AND conjunction intersection ∩

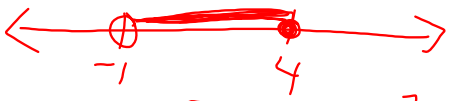
OR disjunction union ∪

ex:

$-9 < 3(x-2) \leq 6$

$-9 < 3(x-2)$ AND $3(x-2) \leq 6$

$x > -1$ AND $x \leq 4$



$\{x \mid -1 < x \leq 4\}$ $(-1, 4]$

$$\frac{y}{3} - 7 < -9 \text{ or } \frac{y+6}{2} > 5$$

$\frac{y}{3} < -2$ OR $y > 4$

$y < -6$

$\{y \mid y < -6\} \cup \{y \mid y > 4\}$

$(-\infty, -6) \cup (4, +\infty)$

$(-\infty, +\infty)$

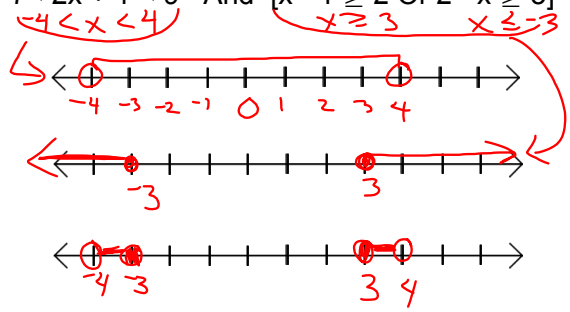
AND

$\emptyset$

FUN!

ex:

$-7 < 2x + 1 < 9$ And $[x - 1 \geq 2$ Or $2 - x \geq 5]$



Absolute Value and Order

Less Th**AND**

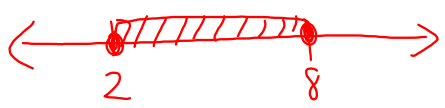
Great**OR** than

ex:

$|x - 5| \leq 3$

$x - 5 \leq 3$ AND $x - 5 \geq -3$

$x \leq 8$ $x \geq 2$



ex:

$-3|a + 1| \leq -15$

$|a + 1| \geq 5$

$a + 1 \geq 5$ OR $a + 1 \leq -5$

$a \geq 4$ $a \leq -6$

ex:

$|2x| < -6$

$2x < -6$ AND $2x > +6$

$x < -3$ $x > 3$

$\emptyset$

Do:

1. $|1.5x + 6| \geq 3$

$1.5x+6 \geq 3$ OR $1.5x+6 \leq -3$ -6

2. $|2x + 1| \leq 5$

$2x+1 \leq 5$ AND $2x+1 \geq -5$

3. $-7 < 2x - 3 < -1$ OR $-1 < 3x + 2 < 14$

$-7 < 2x-3$ AND $2x-3 < -1$

$-4 < 2x$ $2x < 2$

$-2 < x$ $x < 1$

$x > -2$

$-1 < 3x + 2$ AND $3x + 2 < 14$

$-1 < x$ $x < 4$

$x > -1$

HW p44 #s 27-43odd and 44